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The pudovik reaction catalyzed by tertiary phosphines

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Abstract

© 2016 Bentham Science Publishers.Conjugate addition of dialkyl phosphites and ethyl phenylphosphinate to electron-deficient alkenes containing ester, nitrile or amide group under PBu3 catalysis afforded corresponding phosphonates and phosphinates in high yields within short reaction times. Under the optimized conditions developed, the chemistry was free from side reactions involving competitive phosphine-catalyzed dimerization of the activated alkene. Long chain alkyl groups in the phosphite were well tolerated in this transformation. The catalytic activity of PBu3 was far superior to that of tertiary amines. High efficiency, mild reaction conditions, and ease of the catalyst recovery make the proposed procedure competitive with the classical base-promoted reaction.

Keywords

Alkyl H-phosphinates, Dialkyl phosphites, Phospha-Michael addition, Phosphine-catalyzed reactions, Phosphonium zwitterions, X-ray analysis